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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,535	09/01/2006	Roland Martin	MERCK-3224	2981

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EXAMINER	
SMITH, JENNIFER A	

ART UNIT	PAPER NUMBER
1731	

NOTIFICATION DATE	DELIVERY MODE
02/04/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@mwzb.com

Office Action Summary	Application No.	Applicant(s)	
	10/591,535	MARTIN, ROLAND	
	Examiner	Art Unit	
	JENNIFER A. SMITH	1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 December 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4,5,7,9-12 and 21-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Application

Claims 2, 3, 6, 8, and 13-20 are canceled.

Claim 23 is new.

Claims 1, 4, 5, 7, 9-12, and 21-23 are pending and presented for examination.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

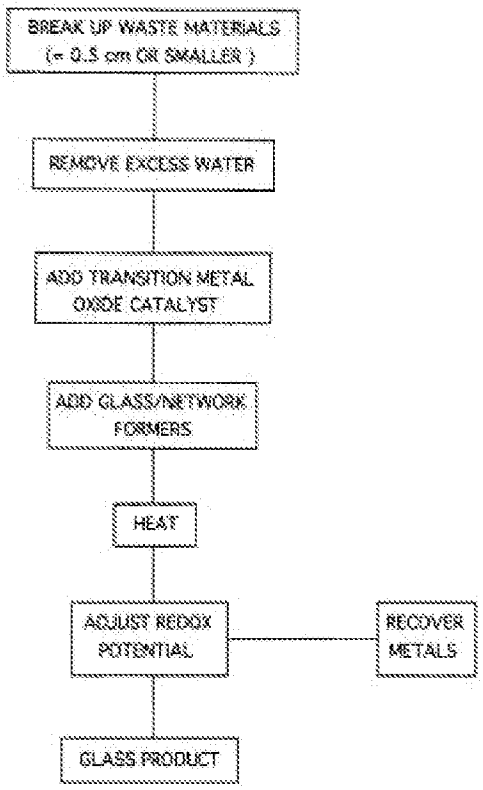
> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 4, 5, 7, 9, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bickford (US Patent No. 5,662,579) in view of Kaida et al. (Japanese Patent Publication No. 2000-084531).

In regard to claim 1, the Bickford reference teaches a process for the stabilizing of organic-containing electronic wastes [See Abstract]. The process is illustrated in Figure 1 below:



The process includes:

mixing waste electronic components with a transition metal oxide catalyst, where the term "transition metal" is used in the customary sense to mean any of the elements having atomic number 21-29, 39-47, 57-79 and 89 or higher - however, oxides of other metals may also be useful for the practice of the invention. Suitable compounds for use with the invention include oxides of Ti, Cr, Mn, Fe, Co, Ni, Cu, Al, Sn, Mo, Pd, Ag, and Pt [noble and non-noble metals] [See Column 5, lines 8-17];

heating the mixture to temperatures of about 1050°C or higher [See Column 6, lines 10-17] to form a fluid [melted] glass mixture;

vitrifying the mixture by rapid cooling;

crushing or pulverizing the glassy material [See Column 8, lines 45-48];

metals are collected at the bottom of the melter may be drawn off and processed for re-use [See 28-31].

The Bickford reference teaches the material recycling process for use with wastes such as ion exchange resins, electronic components such as circuit boards, vacuum tubes, transistors and integrated circuits, and other wastes that contain organic compounds [See Column 4, lines 64-67] but fails to explicitly teach the processing of LCDs.

The Kaida reference is drawn to a method of disposal of liquid crystal panels that includes feeding crushed liquid crystal panel displays into a nonferrous smelting furnace and heat treating to about 1200°C to form a melt [See Abstract]. The LCDs that make up the crushed feedstock that is fed to the furnace of the Kaida reference contain metal elements such as indium tin oxide, chromium metals, tantalum, aluminum, or titanium which can be recovered and recycled [See Paragraph 0028 and 0029]. At the time the invention was made, it would have been prima facie obvious for one of ordinary skill in the art to use the process taught in the Bickford reference for the material recycling of LCDs. One of ordinary skill in the art, at the time the invention was made, would have

been motivated to do so because the use of LCDs in electronic equipment is expanding rapidly and abandoned of obsolete electronics produces huge amounts of waste. Kaida demonstrates the need for a safe method of disposal of LCD equipment [See Paragraphs 0008 - 0010]. One of ordinary skill in the art, at the time the invention was made, would have had a reasonable expectation of success for doing so because although LCDs were not in widespread use (and thus of material concern) at the time of the Bickford invention, they clearly fit the description of types of wastes handled – electronic components and other wastes that contain organic compounds [See Column 4, lines 64-67] and at the time of the invention one would have realized the potential of Bickford's processing steps for the treatment of newer materials such as LCDs.

In regard to claim 4, Bickford teaches heating the mixture to temperatures of about 1050°C or higher to form a fluid [melted] glass mixture and if desired the temperature may be raised until the glass becomes very fluid [See Column 6, lines 10-17]. While the reference does not explicitly teach temperatures in the range of 1200°C to 1400°C, this represents optimization with prior art conditions. Generally, differences in temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such a temperature is critical. “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” [See MPEP 2144.05 IIA]. Furthermore, Bickford teaches motivation for this routine experimentation because the

temperature at which the mixture melts depends on the choice of catalyst and the composition of the waste to be treated [See Column 7, lines 1-10].

In regard to claim 5, Bickford teaches electronic components [See Abstract or Column 2, lines 58-59].

In regard to claim 7, Bickford teaches glass formers and other additives can be added. In that case, silicates or other materials that contain glass formers, including but not limited to recycled glass (cullet), glass frit, quartz, fiberglass, alumina, silica [furnace sand], and oxides of boron, sodium and calcium, can be added. Depending on the composition of the wastes and the selection of metal oxide, other additives such as fluxes, glass modifiers and intermediates may be added [See Column 5, lines 50-59].

In regard to claim 9, the Kaida reference teaches a method that includes feeding crushed liquid crystal panel displays into a nonferrous smelting furnace and heat treating to about 1200℃ to form a melt. Glass contained in the crushed waste is used for iron removing treatment in the nonferrous smelting furnace (material recycling) and organic matter such as the polarizing plates and liquid crystals acts as combustion material [reducing agent] and is thermally recycled [See Abstract].

In regard to claim 22, Bickford teaches mixing waste electronic components with a transition metal oxide catalyst, where the term "transition metal" is used in the

customary sense to mean any of the elements having atomic number 21-29, 39-47, 57-79 and 89 or higher - however, oxides of other metals may also be useful for the practice of the invention. Suitable compounds for use with the invention include oxides of Ti, Cr, Mn, Fe, Co, Ni, Cu, Al, Sn, Mo, Pd, Ag, and Pt [noble and non-noble metals] [See Column 5, lines 8-17].

In regard to claim 23, the Bickford reference does not explicitly teach the amount of electronic material in the mixture. However, one of ordinary skill in the art would have been motivated to determine the optimal concentration within prior art conditions. Differences in concentration will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such a concentration is critical. “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” [See MPEP 2144.05 IIA]. Furthermore, Bickford teaches motivation for this routine experimentation because the amount of metal oxide added to the wastes depends on the choice of oxide (or oxides) and the composition of the wastes. The needed amount may be found by determining the amount of organic material to be oxidized, i.e., the amount of waste materials to be treated and the organics concentration of the materials [See Column 5, lines 25-29]

Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaida et al. (Japanese Patent Publication No. 2000-084531) in view of Gaedcke et al. (US Patent No. 5,496,403).

In regard to claim 10, the Kaida reference teaches a method that includes feeding crushed liquid crystal panel displays into a nonferrous smelting furnace and heat treating to about 1200℃. Glass contained in the crushed waste is used for iron removing treatment in the nonferrous smelting furnace (material recycling) and organic matter such as the polarizing plates and liquid crystals acts as combustion material and is thermally recycled [See Abstract]. The Kaida reference teaches heat treatment of LCDs in a furnace but does not teach the preferred furnace type.

Gaedcke et al. is drawn to a production process operated at 800-1400℃ [See Column 1, lines 2—31] in a rotary type furnace [See Abstract].

One of ordinary skill in the art, at the time of Applicants' invention, would have been motivated to perform the LCD thermal treatment process taught in the Kaida reference in a rotary-type furnace because it is virtually impossible to obtain a uniform temperature over the entire layer thickness of a mixture using heated ovens, for example hearth-type, pusher-type and tunnel furnaces. Rotary furnaces do not have this disadvantage [See Gaedcke, Column 1, 31-40].

In regard to claim 11, the claimed process steps would inherently be present in the process taught by Kaida. Because the LCD material is heat treated in a similar manner, one of skill in the art would expect the presence of the "protective film" and the silicate-containing materials that are parts of the LCD raw material.

In regard to claim12, the Kaida reference teaches a method that includes feeding crushed liquid crystal panel displays into a nonferrous smelting furnace and heat treating to about 1200℃ to form a melt. The LCDs that make up the crushed feedstock that is fed to the furnace of the Kaida reference contain metal elements such as indium tin oxide, chromium metals, tantalum, aluminum, or titanium which can be recovered and recycled [See Paragraph 0028 and 0029]. The Kaida reference teaches silica [furnace sand] contained in the LCD system is used to remove impurities from the furnace. Impurities (for example, iron) which exist in a non-iron refining furnace can be removed by supplying the crushed LCD material, since the liquid crystal panel contains SiO_2 to some extent [See Paragraph 0082].

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bickford (US Patent No. 5,662,579) in view of Kaida et al. (Japanese Patent Publication No. 2000-084531) and further in view of Gefvert (US Patent No. 5,284,633).

In regard to claim 21, the Bickford and Kaida references fail to teach a mixture of noble and non-noble metals which is an ore.

The Gefvert reference teaches an extraction method for the recovery of noble metals from a base metal-containing solution [See Abstract]. The sources of the metal-containing solutions include precious metal slimes resulting from the electrolytic refining of copper; treatment of scrap such as electronic circuit boards; plating effluents; or refractory gold ore [See Column 3, lines 41-50].

At the time the invention was made, it would have been prima facie obvious for one of ordinary skill in the art to use the process taught in the Bickford and Kaida references for the material recycling of LCDs mixed with metal ore. One of ordinary skill in the art, at the time the invention was made, would have been motivated to do so because the growing demand for precious metals in high-technology applications and the increasing cost of precious metals has made the practice of recovering and refining these metals very important. To meet these demands, industry is turning to new sources of precious metals such as recycling precious metals from catalysts and electronic scrap [See Column 1, lines 23-30]. One of ordinary skill in the art, at the time the invention was made, would have had a reasonable expectation of success for doing so because simple substitution of one known element for another – metal ore for other metal materials - would achieve predictable results in view of the teachings of the prior art.

Response to Arguments

Applicant's arguments with respect to the prior art rejections of the claims have been considered but are moot in view of the new ground(s) of rejection. Applicant's amendments to the claims necessitated the new grounds of rejection presented above. Applicants argue the LCD materials are heated to 600-650℃ in the Sumimoyo reference and this does not achieve melting in view of the newly claimed temperature ranges. This argument is persuasive and the rejection in view of Sumimoyo is withdrawn, however a new prior art rejection is introduced above.

The rejection of claim 21 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement, is withdrawn in view of Applicant's clarification of the meaning of the claim.

Applicants argue the Kaida reference does not teach a rotary-tube furnace and is therefore not capable of forming a protective film on the chamotte lining. The Kaida reference teaches heat treatment of LCDs in a furnace but does not teach the preferred furnace type and the Gaedcke reference is cited to remedy this deficiency.

Gaedcke et al. is drawn to a production process operated at 800-1400℃ [See Column 1, lines 2—31] in a rotary type furnace [See Abstract].

One of ordinary skill in the art, at the time of Applicants' invention, would have been motivated to perform the LCD thermal treatment process taught in the Kaida reference in a rotary-type furnace because it is virtually impossible to obtain a uniform temperature over the entire layer thickness of a mixture using heated ovens, for example hearth-type, pusher-type and tunnel furnaces. Rotary furnaces do not have this disadvantage [See Gaedcke, Column 1, 31-40]. In response to applicant's argument that the Kaida reference does not discuss issues related to uniform temperature in the furnace, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). In this case, the motivation for combining the prior art references is present in the secondary reference.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER A. SMITH whose telephone number is (571)270-3599. The examiner can normally be reached on Monday - Thursday, 9:30am to 6:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571)272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J.A. LORENGO/
Supervisory Patent Examiner, Art Unit 1731

/Jennifer A Smith/
Examiner, Art Unit 1731
January 26, 2011